DOCUMENT RESUME

ED 100 560 RC 008 250

AUTHOR	Byerlee, Derek; Eicher, Carl K.
TITLE	Rural Employment, Migration, and Economic Development: Theoretical Issues and Empirical Evidence from Africa. Africa Rural Employment Paper No. 1.
INSTITUTION	Michigan State Univ., East Lansing. Dept. of Agricultural Economics.
SPONS AGENCY	Agency for International Development (Dept. of State), Washington, D.C.
PUB DATE	Sep 72
NOTE	53p.; For related document, see RC 008 252
AVAILABLE FROM	African Rural Employment Study, Department of Agricultural Economics, Michigan State University, East Lansing, Michigan 48823
EDRS PRICE	MF-$0.75 HC-$3.15 PLUS POSTAGE
DESCRIPTORS	Agriculture; Capital; Developing Nations; *Economic Development; *Economic Research; *Employment Projections; Income; Information Needs; Labor Market; Literature Reviews; *Migration Patterns; Public Policy; *Rural Areas; Rural Urban Differences; Technological Advancement; Urban Areas
IDENTIFIERS	*Africa; Rural Nonfarm Sectors; Rural Urban Migration

ABSTRACT

Employment problems in Africa were examined with special emphasis on rural employment and migration within the context of overall economic development. A framework was provided for analyzing rural employment in development; that framework was used to analyze empirical information from Africa; and theoretical issues were raised in analyzing rural employment and migration in economic development. The framework consisted of a micro-economic analysis of the rural labor market; an analysis of rural urban migration; and an aggregate analysis of rural employment as influenced by interaction in the product and factor markets of four sectors--urban, large and small scale; rural nonfarm; and agriculture. Results showed deficiencies in micro-level information (role of the nonfarm sector and farm mechanization); migration information (rural-urban income differentials, capital transfer measurements, and migration elasticity); and established macro-models (they lacked adequate employment focus, were partial equilibrium analyses of more complex problems, and reflected institutional assumptions not widely applicable in the African context). Recommendations emphasized development of better theory and collection of more solid micro-level data, specifically further research on rural employment, off farm employment, and migration. (JC)

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AFRICAN RURAL EMPLOYMENT STUDY

African Rural Employment Paper No. 1

RURAL EMPLOYMENT, MIGRATION AND ECONOMIC DEVELOPMENT:

THEORETICAL ISSUES AND EMPIRICAL EVIDENCE FROM AFRICA

by

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September, 1972

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THE AFRICAN RURAL EMPLOYMENT STUDY

The African Rural Employment Study was initiated in 1971 by a network of scholars in order to further comparative analysis of the development process in selected African countries with emphasis on rural employment problems. The research program is jointly designed by scholars in African countries, Michigan State University, other universities in North America and Europe who desire to pursue research on employment problems in selected African nations. Research emphasis is being directed to Sierra Leone, Nigeria and Ethiopia. In addition, individual scholars in other countries, such as Ghana, Zaire, Tanzania and Kenya are carrying out research on rural employment problems and are members of the network.

The research program emphasizes joint and individual studies of rural employment such as the demand for labor in alternative production systems and in the rural nonfarm sector, the migration process as a link between rural and urban labor markets and the impact of macro policies on labor absorption in agriculture. Attention will be directed to developing policy models to trace the consequences of alternative strategies of agricultural development on farm output, employment, income distribution and migration and to incorporating the employment objective into project, sub-sector and sectoral analysis in developing countries.

The study maintains close links with similar networks of scholars in Latin America (ECIEL) and Asia (CAMS) and with organizations such as the FAO, ILO, and the World Bank, who are engaged in research on employment problems.

African Rural Employment Papers are distributed without charge to libraries, government officers and scholars.

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RURAL EMPLOYMENT, MIGRATION, AND ECONOMIC DEVELOPMENT: THEORETICAL ISSUES AND EMPIRICAL EVIDENCE FROM AFRICA*

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*Slightly revised version of a paper presented at a Conference of the International Economics Association on the "Place of Agriculture in the Development of the Developing Countries," Bad Godesburg, Germany, August 26th - September 4th, 1972.

This paper has been developed as part of a three year study of rural employment problems in Africa which is being financed under an AID/Washington Contract (AID/csd 3625) with the Department of Agricultural Economics at Michigan State University.

September, 1972

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I. INTRODUCTION

The literature of development economics has become increasingly concerned with the "employment problem." Interest in this problem was stimulated by rapid increases in the rate of urban unemployment in many developing countries in the 1960's. Increasingly, however, the employment problem is being examined within the context of several widespread, but related problems in the developing world such as a) open and partial unemployment, particularly in the urban areas, b) low productivity labor and seasonal unemployment in agriculture, c) wide disparities in personal income distributions and d) significant disparities between rural and urban incomes.[1/] Recognizing these problems, numerous economists and policy makers have replaced the traditional emphasis on growth as the primary indicator of development with a redefinition of development to include the multiple dimensions of growth, employment and equity.

Even though there is only modest economic research on employment problems it is fairly clear that a) family planning is in its infancy and the rate of growth of populationwill increase in most developing nations in the 1970's, and b) the industrial-urban sectors will be unable to absorb the increase in the labor force in most countries in the 1970's. The question then arises as to the possible role of absorbing more labor in the rural sector. Since about two-thirds of the population in most African countries live in rural areas, national policies to deal with the employment problem will depend to

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[1/] For general surveys of the employment problem in developing countries see, Turnham [1970]; Eicher, et. al. [1970]; Frank [1971]; Oshima [1971]; Todaro [1971]; Yudelman, et. al. [1971] and Thorbecke [1970].

a large degree on the ability to develop appropriate strategies and policies for rural development. However, the interdependencies between the rural and urban sectors must be taken into account in developing rural development policies. One obvious interdependency is that between the rural and urban labor markets. For these reasons this paper examines the employment problem with special emphasis on rural employment and migration within the context of overall economic development. Specifically we shall attempt to a) provide a framework for analyzing rural employment in development, b) use the framework to analyze the empirical information from Africa and c) raise theoretical issues in analyzing rural employment and migration in economic development.

2. DEVELOPMENT THEORY IN THE AFRICAN SETTING

Development theory is inevitably built upon a specific institutional structure. The well known surplus labor models depend upon an institutionally determined agricultural wage rate and a given institutional structure, such as a landlord-tenant system, to extract the agricultural surplus. Moreover, most of these models operate on the assumption of a closed economy. These types of assumptions have led to Myint's [1965] criticism of the over emphasis of development economics on the "India-type" model. Such models are not directly relevant to other countries with different population densities and institutional environments.

The concept of surplus labor and disguised unemployment in agriculture has never been seriously applied to tropical Africa although there is a legacy of dispute in countries such as Egypt. Several authors, including Martina [1966], McLoughlin [1962], Barber [1966] and Godfrey [1969] have questioned the use of labor surplus models of development in the African environment. Most authors have proposed a "land surplus" assumption as more appropriate although little effort has been made to analyze the process of

labor allocation and development in a dual economy under a land surplus assumption.

Helleiner [1966b] in an attempt to develop a typology of development theory to include the African case, recognizes three types of situations or growth stages. First, there is the land surplus economy in which labor is the limiting factor in production. However, as population growth continues a second stage is reached where all available land is utilized. There may be some technological adjustments toward more intensive cultivation but eventually a third stage is reached where labor becomes surplus. The African situation is complicated by the existence of all three stages even within one country, although Helleiner believes the land surplus stage is a useful approximation for most African countries.[1/]

Much of the literature on African development is a derivative of Myint's "vent for surplus" model of development [Myint, 1965] which explains the widespread introduction of cash crops for export within the existing smallholder subsistence pattern of farming. This model hypothesizes that increased output (e.g., export crops) result from the use of surplus land and labor obtained by substituting work for leisure in response to increased effective demand for agricultural production.[2/] This of course implies that the African situation was one of <u>both</u> surplus labor and surplus land, although the surplus labor arises for quite a different reason from that in the Lewis-type densely populated economy. In the surplus labor models the

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[1/] For example, it is estimated that 1.5 percent of the available land in the Republic of Zaire (formerly the Democratic Republic of the Congo) is under cultivation. Zaire has a population of about 20 million and a land area about two-thirds the size of India. However, in sections of Nigeria and Kenya there are population densities of 400 to 500 persons a square mile.

[2/] In fact increased production in the "vent for surplus" model typically requires some injection of foreign capital particularly for transport, in order to "exploit" the surplus land and labor.

surplus arises because of limited substitutability between a scarce factor, land, and an abundant factor, labor, while in the "vent for surplus" model, a lack of effective demand causes the surplus.[1/]

A further institutional factor which must be considered in an analysis of rural employment in African development is the agrarian system of smallholder communal ownership of land. As a result, there is no landlord-tenant system, a relatively small class of landless laborers and generally no land market. Such a system has quite different implications for factor mobility and factor markets than a landlord-tenant system.

These general differences in resources endowment, the export orientation, and the agrarian system of African economies, caution against the direct application of popular development theories to the African situation. But this does not preclude modification of these models to fit the African institutional setting, just as we hope the framework we present below for analysis of employment problems has relevance to other regions. This is because African countries share the fundamental ingredients of the employment problem of the developing world--high rates of population growth rates coupled with a dual economic structure.

3. A FRAMEWORK FOR THE ANALYSIS OF EMPLOYMENT PROBLEMS

In order to analyze the employment component in economic development, we first provide a framework in which to delineate the important theoretical issues and categorize the relevant empirical evidence--in our case assembled from Africa. We depart from the conventional two sector or dual economy

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1/The emphasis on exports in the "vent for surplus" model does recognize the importance of export growth in African development. Exports account for 25 to 60 percent of total production in most African countries, [Berg 1966]. Even in the largest country, Nigeria, agricultural exports have acted as the main stimulant to growth [Helleiner 1966a].

model to divide the economy on the basis of three criteria a) type of output (e.g. food or nonfood), b) firm size and c) location. The first criterion is rather obvious. To properly consider the production process and product markets there is need to include both agricultural and nonagricultural sectors. The relationships of these sectors as growth proceeds is well documented (e.g. Johnston and Nielsen [1966]). The main factor differentiating growth of agricultural and nonagricultural sectors is the different income elasticities of demand for their respective outputs.

The second criterion, firm size, divides the economy into large-scale and small-scale sectors--otherwise known as the modern and traditional sectors or the capital intensive and labor intensive sectors.[1/] Since the number of employees is used in practice to categorize firms in either sector, we prefer the large-scale and small-scale nomenclature. However, firms in the small-scale sector are also distinguished by the fact that they are family owned, operated primarily with self-employed family labor, use relatively labor intensive techniques and depend largely on indigenous resources.

It is also useful to delineate the economy on the basis of location; that is rural and urban. In rural areas a good deal of agricultural and nonagricultural production is produced and consumed within the household without monetary exchange. Seasonal factors are also important in labor allocation and production in rural areas in both farm and nonfarm production.[2/]

[1/] In urban areas this breakdown is also variously referred to as formal-informal, organized-unorganized and enumerated-unenumerated.

[2/] An additional reason for the rural-urban division is the great concern for the rapid rates of urbanization in many developing countries relative to the rates in developed countries at a comparable stage of development. This concern is heightened by the fact that most open unemployment is concentrated in urban areas.

Dividing the economy on the basis of the three criteria discussed above leads to a breakdown of the economy into at least four sectors shown in Figure I as a) small-scale agriculture, b) small-scale rural nonfarm, c) small-scale urban and d) large-scale urban.[1/] In some cases it may be necessary to add other sectors such as large-scale plantation agriculture which is important in some countries.[2/] It should also be noted from Figure I that the breakdown of the economy into four sectors precludes the use of terms such as rural, traditional, and agricultural which are often used interchangably in the literature.

In Figure I, we have divided the labor market into rural and urban labor markets. We use the term labor market broadly to refer to the process or mechanism which determines the allocation of labor between economic activities and its remuneration. In practice much of the labor force of developing countries is self-employed in subsistence production, and is not offered to a market for money wages. Nonetheless workers who are self-employed in largely subsistence production make decisions about the allocation of labor between economic activities for nonmonetary rewards, and a labor market in the above sense does exist.

The analysis of the rural labor market will be viewed in a supply-demand framework at three stages of aggregation. First, we examine the operation of the rural labor market at the micro-level. Thus, labor demand in rural areas depends upon factors such as seasonality, effective demand for the

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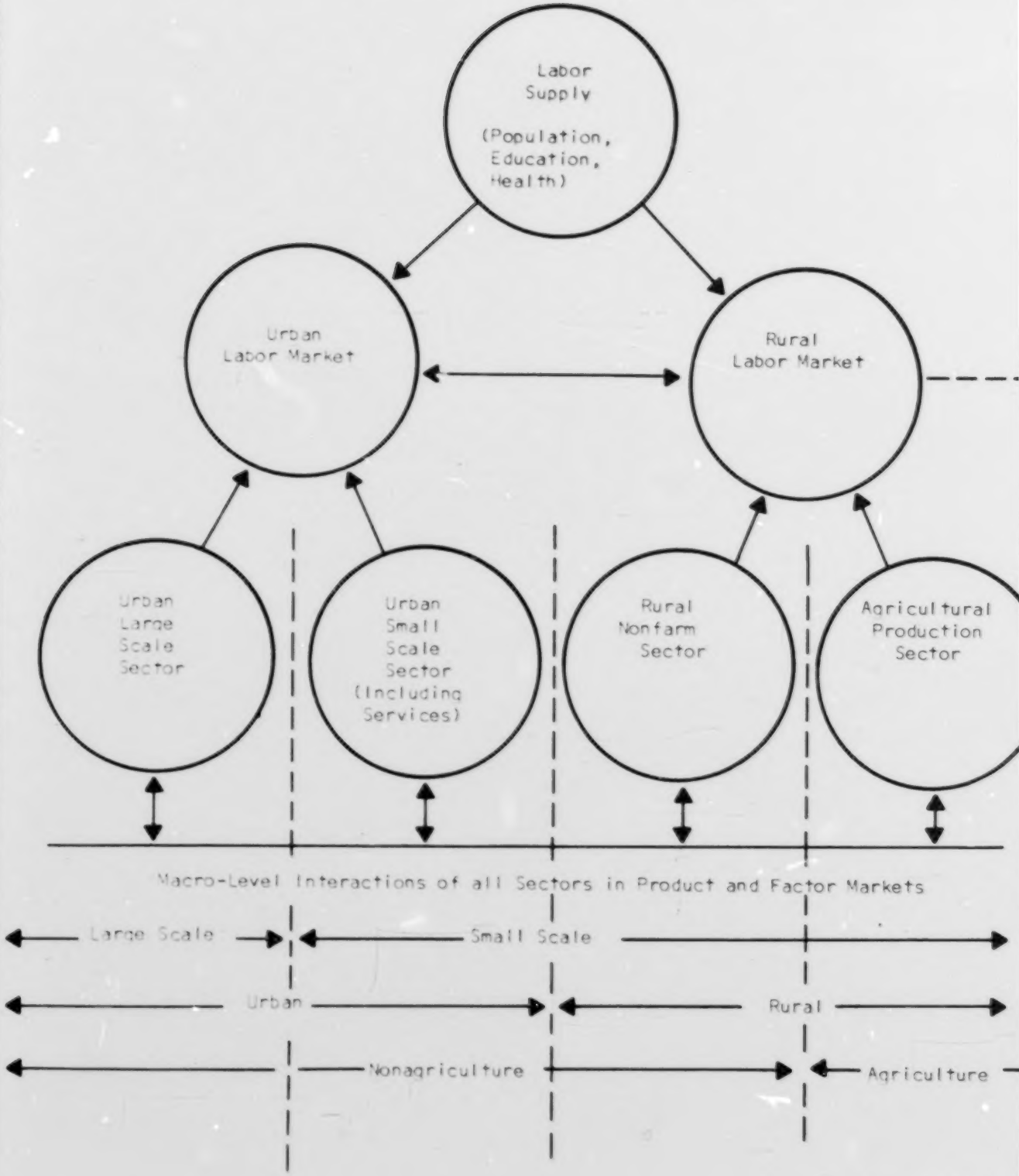
[1/] Other authors have also expanded the dual economy model to address employment questions. Reynolds [1969] proposes four sectors a) modern urban, b) government, c) urban traditional and d) agriculture. Oshima [1970] proposes three sectors a) capital intensive, b) labor intensive nonagriculture and c) labor intensive agriculture.

[2/] Within each sector a further breakdown could also be made such as the division of agriculture into food crops and export crops, sectors which impinge differently on the growth process in an open economy. Likewise it may sometimes be useful to divide the large-scale sector into government and private sectors.


Labor Supply
(Population, Education, Health)
Urban Labor Market
Rural Labor Market
Urban Large Scale Sector
Urban Small Scale Sector (Including Services)
Rural Nonfarm Sector
Agricultural Production Sector
Macro-Level Interactions of all Sectors in Product and Factor Markets
Large Scale
Small Scale
Urban
Rural
Nonagriculture
Agriculture

output of the sector, the production techniques employed, and the availability of other factors such as capital and land. Likewise the supply of labor at the micro-level is determined by factors such as health and nutrition, family participation in the labor force, and mobility of labor between farms, between farm and nonfarm jobs and between different regions.

Second, we analyze rural-urban migration as the principle linkage between the rural and urban labor markets and an important factor determining the supply of labor in rural areas. Finally, at the macro-level, the labor market is integrated into other product and factor markets to exp cre the complex of interactions between the various sectors. Thus, agriculture's terms of trade is an important determinant of labor demand in rural areas. On the supply side, at the macro-level a critical determinant of labor supply is the overall rate of population growth.

4. MICRO-ECONOMIC ANALYSIS OF THE RURAL LABOR MARKET

The concepts of disguised unemployment and institutional wage rates which have been developed to explain the pattern of labor utilization in rural areas of developing countries assume that cultural or institutional factors constrain the application of traditional Western economic theory to describe rural labor markets. These concepts form the micro-economic basis of the Fei and Ranis model of development [Fei and Ranis 1964] and its numerous derivatives. Recently these concepts have been questioned by the rigorous theoretical analysis of Sen [1966], Stiglitz [1969] and others, and empirical work such as Hansen [1966, 1969]. Nonetheless, economists continue to produce an abundance of models built on variations of the disguised unemployment concept (e.g. Newberry [1972], Mehmet [1971] and Iyoha [1972]).

While analysis based on the assumptions of disguished unemployment has not been widely applied in Africa, there is substantial literature on African "abnormal" economic behavior with respect to labor allocation in rural areas, ranging from the backward bending labor supply curve of "target workers" to the high leisure preference of African farmers and the restrictiveness of the African land tenure system.[1/] However, in the last decade several micro-level studies have been conducted which tend to discredit these earlier concepts. We turn now to a review of this new body of empirical evidence on utilization of labor in rural areas in a) agricultural production and b) nonfarm economic activities.

(A) Labor Utilization in Agricultural Producton

Most studies in rural areas of Africa have found comparatively low labor use in agricultural production. Cleave [1970] in a survey of 15 micro-level studies of agricultural production in areas of both high and low man/land ratios found an annual average of little over 1000 hours/male adult used in agricultural production.[2/] At first sight these figures suggest a substantial pool of surplus labor in rural areas which can be drawn into production by increasing the effective demand for agricultural products in accordance with the "vent for surplus" model discussed earlier.

Aggregate figures of the number of hours worked per year, however, disguise two important characteristics of rural labor use: a) seasonability of labor demand and b) competition of nonfarm economic activities for farm labor. Labor use in agricultural production is typically seasonal. In

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[1/] For example, in an International Economics Association Conference in 1962, these phenomena were discussed in papers by Yudelman [1964] and Houghton [1964].

[2/] This figure is based on actual time spent in the fields and does not include time spent on supplementary agricultural activities such as travel to and from the field and processing and marketing of products.

Africa this seasonality is most pronounced in the dryer savannah regions, north and south of the equator. There is evidence from several studies [Norman 1969] [Luning 1967] and [Johnson 1969] that these seasonal labor bottlenecks limit future expansion of agricultural production under existing technologies. In addition, a considerable amount of "leisure" time is actually spent on nonfarm economic activities such as crafts and trading [Jones 1968]. As much as 50 percent of working time may be spent in these activities (e.g. Norman [1969], Cleave [1970] and Luning [1967]).

The interaction of seasonal factors and nonfarm employment opportunities in rural areas is documented by Norman [1969]. In a survey of three villages in Northern Nigeria, Norman found an inverse relationship between farm labor inputs and off-farm labor inputs suggesting that off-farm work is a means of salvaging labor time that has a low opportunity cost. However, even though seasonal labor peaks were a bottleneck to agricultural expansion, farmers still spent 31 percent of their time in the peak month in off-farm employment. Norman speculates that this might correctly reflect the opportunity cost of off-farm labor relative to farm labor, particularly since some activities such as trading are maintained by farmers as year-round activities. Alternatively a farmer may be forced to work off the farm at the peak season when he encounters a cash and food shortage and does not have access to credit. Production function studies by Norman [1971] and Luning [1967] show reasonable agreement between the MVP of labor in agriculture and the off-farm opportunity cost of labor.[1/] However, these studies

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[1/] These results depend somewhat on farm size. Norman [1971] found that small farmers used more labor per acre, hired less labor and devoted more time to nonfarm economic activities than larger farmers. Although the MVP of labor on small farms was less than that for large farms it was significantly greater than zero. These results are consistent with studies in other regions which show some measure of substitution of labor for land on small farms (e.g. Mazumdar [1965] for India, and Dorner [1970] for Latin America).

include aggregate measures of labor (man hours/year) rather than seasonal use in estimating the production function. Other studies by Johnson [1969] in Rhodesia and Heyer [1971] in Kenya show considerable seasonal variation in the MVP of labor but do not relate it to the off-farm opportunity cost.

Although most studies have noted the seasonal pattern of demand for labor, little attention has been given to the factors determining the supply of labor. Most of the labor supply is provided by the family although the degree of participation of women in the agricultural labor force varies in Africa. For example, in East Africa women tend to be primarily involved in tending food crops, while in West Africa women play an important role in nonfarm activities particularly trading. Some limited evidence from Cleave [1970] suggests that sex roles may change as seasonal bottlenecks become a severe constraint on agricultural production.[1/]

Seasonal labor bottlenecks can also be alleviated by hiring labor to supplement the family labor input. Since there is generally no class of landless laborers in Africa, hired labor must be provided by a) other farmers, particularly those with smaller farms, and b) migration of labor from other areas.[2/] Mobility from small farms to large farms is often limited by the fact that smaller farms in the same area reach their peak demand for labor at the same time as the larger farms. There is striking evidence from Egypt that the wage rate varies seasonally in response to these seasonal demands [Hansen 1969]. In other areas there is a less pronounced

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[1/] Another factor often discussed in the literature regarding labor supply is the influence of health and nutrition.

[2/] A further source of hired labor is rural workers primarily engaged in nonfarm occupations. Although there is clear evidence of the importance of this source of labor in the U.S. (e.g. Fuller and Van Vuuren [1972]), we know of no evidence that this is important in Africa.

seasonal peak in wage rates, possibly because of the shortage of cash which is most acute at the peak labor demand.

Migration of labor between rural areas, particularly seasonal migration, has also helped to alleviate seasonal labor bottlenecks and fluctuations in wages. In West Africa, laborers leave their home areas in the dryer northern regions after harvest to work in the perennial cash crop zone of the southern areas, returning again for planting of food crops.[1/] Beals and Menezes [1970] in an interesting interregional programming study show how this seasonal migration pattern has improved the total allocation of labor in rural areas and has undoubtedly been a major factor in the establishment of cash crops. However, Gwyer and Ruigu [1971] on the basis of casual observation in Kenya suggests that poor information and lack of credit facilities are impeding this type of interregional mobility of seasonal labor.

The foregoing evidence is based upon static analysis of labor use at one point in time. The dynamic adjustments in the rural labor market in response to the changing economic environment are of particular interest for analyzing rural employment in development. In Africa, the most significant factors stimulating agricultural development have been i) the introduction of cash crops for export, and ii) technological change--both biological and mechanical--in the production of both food and cash crops.

(i) Introduction of Cash Crops: Since production of food under the

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[1/] In the Ivory Coast, an estimated 350,000 foreign workers, mainly from the Upper Volta, were employed in agriculture in 1970.

existing technology has largely been retained in regions where cash crops are produced, the introduction of cash crops can only have been accomplished through three sources of surplus labor a) utilizing leisure time, b) utilizing seasonal slacks in labor demand or c) releasing labor from nonfarm economic activities. Cleave [1970] presents evidence that cash crop production was achieved to a large extent through use of labor in slack seasons. This is particularly the case for perennials where labor demands are less seasonal. Furthermore, Okurume's [1970] study of cocoa production in Nigeria and Collinson's [1970] study of tobacco production in Tanzania indicate adjustment of crops grown for subsistence production toward less labor intensive crops,such as cassava, in order to resolve conflicts between food crops and cash crops for labor demands at certain seasons.

Cash crops may also be produced using labor released from nonfarm economic activities such as crafts and trading. This is essentially along the lines of the Hymer and Resnick model of development where rural households release labor from traditional nonfarm activities in response to economic incentives to specialize in agricultural production (Hymer and Resnick [1969] and Resnick [1970]). The cash receipts are then used to buy modern manufactured goods and replace traditional home produced crafts. Limited evidence for this process is provided by Okurume [1970] who found an inverse relation between the extent of cash crops production and involvement of farmers in nonfarm activities in Western Nigeria.[1/]

Finally the introduction of cash crops may have been at the expense of leisure as in the original concept of the "vent for surplus" model. There

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[1/] A logical extension of the Hymer-Resnick model would be complete specialization of farmers in cash crop production with food bought on the market. The evidence from Africa shows that this has occurred only to a very limited extent. Risk factors resulting from poorly developed food markets would appear to explain this anomaly. (Nowshirvani [1971] and Okurume [1970]).

is some evidence from Dean [1966] that this is the case for the introduction of tobacco in Malawi. In practice all three sources of "surplus" labor have probably contributed to cash crop production, but the relative importance of each needs to be further researched to understand supply response of peasant farmers in Africa.

(ii) New Technologies and Labor Use: Mechanization: We have noted that seasonal labor bottlenecks act as a constraint on agricultural production in most areas of Africa. The introduction of new technologies, both biological and mechanical, may increase rural incomes and employment through a) increased cropping intensity, b) expanded crop area, c) increased yields, d) reduced costs and e) a shift to higher valued crops.

In Africa higher yielding varieties of food crops are slowly being introduced such as the new maize varieties in Kenya, dwarf wheat varieties in Morocco and Tunisia and the new millet and sorghum varieties in Northern Nigeria. In areas of land shortage these new varieties have enabled farmers to reduce the area sown to subsistence crops and increase the area sown to cash crops.

Since Africa generally has an abundance of land, attention has been given to mechanization to overcome seasonal labor bottlenecks. Many countries have artifically increased the demand for mechanization by distorting factor prices through duty-free machinery and fuel imports, and credit at low or negative real rates of interest. Clayton [1971] and Gemmill and Eicher [1972] report that most tractor hire schemes in Africa have not been financially viable. Furthermore, when factor prices are corrected using shadow prices, many of the financially viable projects cannot be defended on grounds of social profitability (Eicher, et. al. [1970] and Bose and Clark [1970]).

Although mechanization has often been associated with large-scale tractorization of farm operations, considerable potential exists for use of animal power and selective mechanization of specific operations which are bottlenecks. Several studies of oxen-power for cultivation and weeding suggest a limited but still important role for oxen-powered cultivation. For example, Renaut [1965] showed that oxen-power increased both area and yields in the Ivory Coast while Laurent [1968] concluded that oxen-power in Northern Nigeria was more economic than either hand labor or tractors. However in Malawi, where man/land ratios are relatively high, Gemmill [1971] found that oxen-power was not economic for farmers, since it did not significantly increase yields, cropping intensity or area sown, even on the larger farms.

Gemmill and Eicher [1972] in an analysis of research on farm mechanization in developing countries, conclude that economists have often arrived at broad policy conclusions about farm mechanization which have not been supported by solid evidence.[1/] Moreover, research on mechanization has frequently focused on only one option such as tractor hire schemes, instead of examining a range of alternative packages of biological and mechanical technologies. Factor endowments, ecology and institutions vary so widely that it is almost impossible to generalize about the economics of mechanization on a country wide basis. Since mechanical power is simply one input into the production process rather than an end in itself, research on mechanical technology should be an integral part of farm management and

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[1/] For example, Inukai's [1970] study of mechanization in Thailand has been frequently cited by some advocates of mechanization. Although Inukai presents data on labor requirements for alternative systems of rice cultivation in Thailand he does not analyze the social costs and benefits of mechanization of rice production in Thailand. Measurement of labor requirements for alternative production systems cannot be translated into national policy recommendations.

production economics research.[1/] This is particularly important because of the significant interaction between the introduction of mechanical and biological technologies which has become apparent in "green revolution" countries.

(B) Labor Utilization in Rural Nonfarm Enterprises

Rural nonfarm economic activities are important in the employment of rural labor. In addition to the extensive involvement of farmers in nonfarm activities, as much as twenty percent of the rural labor force may depend on nonagricultural pursuits as its primary occupation (ILO[1970]). Furthermore, the importance of this sector is likely to increase as governments endeavor to decentralize industry to counter the rapid rates of urbanization in Africa.

Nonfarm rural economic activities include both monetized and nonmonetized sectors. Those that are monetized include a) consumer goods manufacturing trading and services (e.g. crafts, bicycle repairs), b) marketing and processing of agricultural products and c) manufacture of agricultural inputs, such as hand tools. Those activities that are performed within the household and are therefore nonmonetized include house construction, food preparation, firewood collection, etc..

Generally there is little information on small-scale industries in rural areas of Africa, although several studies by Kilby [1969], Callaway [1969], and de Wilde [1971] provide useful information on urban small-scale industries. An ILO study of Western Nigeria (ILO [1970]) showed that rural industries are family owned, are labor intensive, employ few purchased capital goods and use largely traditional technologies and family labor.

[1/] In Africa an ongoing research study of rice production in Sierra Leone by Dunstan S. C. Spencer of Njala University College will do much to correct some of these deficiencies.

Likewise, most skills are obtained through nonformal sources rather than through formal education (Diejomaoh and Sheffield [1972]). The ILO study, however, did delineate a small group of industries (e.g. blacksmith, carpenters and tailors) using "medium level" capital intensive techniques.

Although there are some survey data available on rural small-scale industries, there are no analytical studies on the dynamics of the growth process in this sector. It is clear that growth of rural small-scale industries is intimately linked through both the factor and product markets with agricultural production. In the factor market we have already noted the significant inverse relationship in the allocation of labor between farm and nonfarm activities according to the seasonal nature of agriculture production. Furthermore, the 1972 ILO study of unemployment in Kenya noted that about 75 percent of all rural nonfarm enterprises are owned by predominantly larger farmers, suggesting significant transfers of savings and entrepreneurial ability from agriculture.

In the product markets, the demand for the output of rural nonfarm enterprises depends largely on a) consumer demand of rural households and b) the backward and forward linkages of agricultural production, particularly processing and marketing of agricultural products. In both cases, the seasonality of agricultural production permeates the demand pattern for rural small-scale industries. Processing and marketing of agricultural output peaks after the harvest season. Likewise, the demand for consumer goods varies with the cash receipts of rural households which again are seasonal. The ILO study in Western Nigeria observed this seasonal pattern of demand, although they did not attempt to relate it to the seasonal supply of labor noted above for rural small-scale enterprises (ILO [1970]).

(C) Rural Labor Utilization and the Rural Labor Market

The foregoing review of labor utilization in both agricultural production and nonfarm enterprises shows that, although there are few studies available focusing specifically on the allocation of labor and wage rate determination in rural areas, a flexible and active rural labor market exists. This result is significant in that it covers a variety of agricultural systems ranging from areas with low man/land ratio and subsistence production to areas with high man/land ratios and cash crops.

There is evidence of substantial mobility of labor between farm and off-farm jobs and to some extent from small farm to large farms. Thus, although there is virtually no land market, the relatively flexible labor market ensures fairly efficient utilization of labor in rural areas. That is, the institutional structure has not seriously impeded the efficient operation of the labor market. Mobility between regions or districts to alleviate seasonal bottlenecks and improve the disparities in man/land ratios has occurred on a limited basis although social factors associated with tribal diversity and problems of credit have been cited as impediments in this inter-regional mobility of labor. (Eicher, et. al. [1970]) This general flexibility in the labor market is evidenced by the widespread introduction of cash crops within the existing small-holder structure (Uchendu and Anthony [1969]).

However, all of this does not rule out the existence of considerable underemployment of labor in rural areas, because of seasonal slacks in labor demand. Seasonal slacks vary from area to area being most pronounced in the savannah areas which have a long dry season. To some extent they are alleviated by employment in nonfarm economic activities, (probably of low productivity) and by seasonal migration. Nonetheless, there appears to be

substantial potential for fuller utilization of human resources and increased employment in rural areas through, for example, technological change to overcome seasonal labor bottlenecks.

This review of the available micro-level studies on labor utilization in rural areas of Africa leads us to conclude that our standard theoretical apparatus for static analysis of labor markets is generally adequate for application in Africa.[1/] However, the dynamics of the rural labor market are not well understood, particularly, the nature of the adjustment in labor use in response to the introduction of cash crops and new technologies. Much of this uncertainty centers around the nature and importance of nonfarm activities in rural employment.

In the Hymer and Resnick [1969] analysis of rural labor use, rural households in a purely subsistence economy are engaged in both farm and nonfarm activities. The introduction of a market for agricultural products induces the household to specialize in agricultural production and buy manufactured goods on the market. This model assigns a declining role to nonfarm employment as development proceeds. However, many of the farmer household activities may still be performed in rural areas by rural households which specialize in producing nonagricultural goods, rather than having them imported from urban areas or abroad. Furthermore, increases in agricultural production may lead to an income effect that increases rural consumption and to an output effect associated with backward and forward linkages of agriculture such as manufacture and service of farm machinery and processing of farm output. Both effects are likely to have a strong spillover effect on nonfarm rural employment.

[1/] This observation is similar to Mellor [1967] who was probably more concerned with the Asian situation in his analysis.

In addition to the demand factors, the supply of labor, capital and entrepreneurship will determine the growth of nonfarm production. To the extent that investment is largely an embodiment of labor, and skills are obtained informally, labor may limit production in this sector under existing technologies although further empirical research is needed. Given these dynamic considerations and the importance of seasonal factors in the demand for, and in the supply of labor to nonfarm production, the role of nonfarm employment is likely to be much more complex than envisioned in the Hymer-Resnick model.

5. RURAL-URBAN MIGRATION

Migration in Africa has historically been important. In the precolonization period, the relative abundance of land facilitated migrations (Mabogunje [1971]). Later with colonization, a circular migration pattern developed where male workers often migrated considerable distances to obtain cash income in mines and plantations and after several years returned to their home area. Although this type of migration is still important in Southern Africa, Caldwell [1969], Heisel [1971] and others have noted the tendency for rural-urban migration of a permanent nature to become more important in recent years.

(A) Characteristics of Migrants and the Migration Process

The importance of migration in African economic development has attracted numerous researchers yielding a large body of knowledge about migrants and the migration process. However, until recently, research was almost exclusively the domain of anthropologists, sociologists and geographers. Consequently, there is a dearth of information on the economic behavior of rural-urban migrants and the implications of rural-urban migration for employment and development in both rural and urban areas.

The African rural-urban migrant exhibits many of the characteristics of his counterparts in other developing regions. Typically the African migrant is younger and better educated than the rural population from which he originates. Historically males have dominated migration streams but more recently females have played a larger role (Caldwell [1969]).[1/] Moreover, the migrant generally will retain ties to his home area partly through visits but largely through remittances of part of his urban earnings to rural areas.[2/] The few quantitative estimates in Africa indicate that substantial savings of up to 25 percent of urban incomes are transferred back to rural areas where they can be used for consumption purposes or for productive investment. To some extent this process tends to off-set the considerable transfer of savings of rural people to urban areas as the result of the investment in the education of people who migrate. But both transfer processes underscore the fact that rural-urban migration is a complex interaction of the rural and urban sectors in both the labor and capital market (here broadly defined to include human capital).

(B) The Urban Labor Market

Rural-urban migration provides the basic linkage between the rural and urban labor markets. However, a brief description of the urban market is necessary for a more complete understanding of this linkage. Unlike the rural labor market discussed in the previous section, most observers of

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[1/] For example, Caldwell [1969], in a survey of 15,000 households in Ghana notes a predominance of migrants in the 15-19 year age category. Furthermore, 65 percent of all rural people with no education had never migrated compared with only 17 percent for respondents with some secondary schooling.

[2/] This again is a reflection of the land tenure system. The cash remittances are a form of security to enable him to return to his village at any time particularly on retirement.

African urban labor markets have noted the importance of institutional factors in the determination of urban wages. Studies by Ghai [1968] in Kenya, Knight [1967] in Uganda, and Diejomaoh and Orimalade [1971] in Nigeria all suggest that the wage rate in the modern large-scale sector is higher than that dictated by market forces.[1/] By contrast, the wage rate in the urban small-scale sector is determined competitively by supply and demand leading to a division of the labor market into organized and unorganized sectors (Kilby [1969]).

The nature of the institutional factors forcing up wages in the large-scale sector are not clearly understood. In many cases, governments through minimum wage legislation or their own wage structure are able to set a pattern of wage determination which is followed in private industry (Berg [1966]). Alternatively private industry through the influence of "image conscious" foreign firms (Reynolds [1969]) or trade unions (Kilby [1967]) may reinforce the high wage structure.

Given this structure of the urban labor market, the rural migrant to urban areas may enter a) the large-scale sector as a wage earner, b) the small-scale sector as a self-employed worker, or c) remain unemployed. However, since there is a considerable excess demand for modern sector jobs, migrants may have to initially join the urban small-scale sector or remain unemployed, depending on support from relatives and friends.

(C) The Rural-Urban Income Differential

Most studies of rural-urban migration have singled out economic motives as the primary determinant of migration. Some authors have stressed rural

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[1/] This applies only to unskilled labor. Berg [1966] suggests that high earnings of skilled workers is a reflection of scarcity.

poverty (push factors) other high urban incomes (pull factors) but clearly the income differential is the relevant factor in both cases. However, there are many difficulties in defining and measuring the rural-urban differential because of problems in a) measurement of the relevant rural income, b) measurement of the relevant urban income, and c) comparing the two incomes. Knight [1971] provides an excellent discussion of the relevant measure of rural incomes. The supply price of labor will vary depending on whether the individual or the household is the decision making unit. If the marginal productivity of labor is less than the average productivity, the household as the decision making unit could subsidize a migrant in town. Furthermore, the agrarian system can also determine the relevant rural income, since the average product of labor is the relevant income for an individual who cannot rent or sell his land because of the communal land holding system.

In the urban areas complications also arise in measuring the relevant urban income where the income varies according to whether the migrant enters the large-scale sector or small-scale sector or remains unemployed. Todaro [1969] hypothesizes that the relevant urban income is the present value of expected earnings after accounting for the probability of a migrant obtaining these various employment opportunities. The probability of obtaining an urban job is, of course, a function of the rate of urban unemployment. The time dimension also is important in discounting future earnings to the present value since the probability of obtaining a job presumably increases with the amount of time a migrant has been in the city. There is good evidence from the U.S. that the rate of unemployment does effect the rate of rural-urban migration (e.g. Wertheimer [1970], Johnson [1971], but the results from Africa are inconclusive. Rempel [1970] made an extensive study of rural-urban migrants in Kenya to test the Todaro model but obtained

inconclusive results.[1] However, recent evidence from Sabot [1972] in Tanzania suggests that migration has adjusted to the increasing unemployment of educated persons.

Finally there are several difficulties in comparing rural and urban incomes. First the returns to education in rural and urban areas are different, and this may not be revealed in any comparison of average rural and urban incomes.[2] In addition, the urban worker does not consume all his income; some is shared among unemployed relatives and some is remitted to rural areas. Third, there are various problems of conversion to real income where prices are higher, social services more accessible, fringe benefits more widespread, but leisure time less in urban areas. Finally, the relevant variable is not the actual income differential but the perceived differential. Actual and perceived differentials will differ if there is imperfect information on urban jobs or unduly high aspirations in rural areas as a result of education.

The issue of rural-urban income differentials has been treated in detail because often such comparisons are made without qualifying the results. The most common comparison is between average rural incomes and the wage rate in the modern urban sector. Comparisons of these two variables in a number of countries such as Nigeria (e.g. Lewis [1967], Diejomaoh and Orimalade [1971], Ghana (e.g. Rourke and Sakyi-Gyinae [1972]) and Kenya (e.g. Todaro [1971]) all suggest a substantial and in most cases rising differential, largely as a result of rapid increases in urban

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[1] Rempel's study contains important methodological weaknesses, particularly the emphasis on studying migrants only in urban areas. Rigorous testing of the Todaro model in the African environment has not been carried out.

[2] Evidence of the considerable differences in returns to education in rural and urban areas of Africa is given by Todaro [1971] in Kenya and Sabot [1972] in Tanzania.

wage rates. But these comparisons ignore the fact that many migrants enter the urban small-scale sectors where wages are lower.[1/] In Ghana, Knight [1971] has made a careful comparison of rural and urban incomes from a survey which includes both workers in the urban small-scale and large-scale sectors and finds relative equity among rural and urban workers. However, these results are probably atypical of Africa in general because evidence from other sources such as Rimmer [1970] and Rourke and Sakyi-Gyinae [1972] suggests that real wages in Ghana have remained steady in recent years in contrast to rapid increases in other African countries.

(D) Implications of Migration for Rural Employment and Development

The effect of the urban wage rate on the rural wage rate and rural employment is difficult to judge given the limited knowledge of the rural-urban migration process. Within the Todaro model, institutionally induced increases in urban wage rates would result in further out-migration of labor and increased rural wage rates.[2/] A further aspect of the Todaro model is the difference in shadow wage rates in rural and urban areas. Because an increase in urban employment by one worker is likely to induce an influx of more than one migrant, the shadow wage in urban areas is equal to the total number of induced migrants multiplied by their marginal productivity in rural areas (Harris and Todaro [1970]). These important implications of the Todaro model underline the need for further refinement and testing of the model.

[1/] Thus, the urban small-scale sector accounts for 30 percent of urban employment in Kenya (ILO [1972]) and 60 percent in Nigeria (Frank [1971]).

[2/] This assumes that rural labor has a positive marginal productivity--a fact we have established in an earlier part of this paper.

Divergence of the shadow wage rate in rural and urban areas can also arise out of the tendency of governments to concentrate social amenities in urban areas thus increasing the real wage of urban workers. These differences in shadow wages lead to a divergence in private and social returns to migration which should be accounted for in location and evaluation of projects and in formulating rural development policies.

The impact of rural-urban migration on rural employment and development will be determined not only by the transfer of labor but also of capital. Given that investment in education in rural areas represents a considerable source of rural saving, the high rate of urban unemployment of primary and secondary school leavers from rural areas may indicate an undue emphasis on formal education as a productive investment.[1/] Sabot [1972] presents evidence from Tanzania that private investment in education in rural areas is being reduced in response to the increase in unemployment of school leavers. This drain of educated youth from rural areas may be partially offset by the substantial remittances of those migrants who do find jobs in urban areas. Again, we have no evidence whether these remittances are being invested in rural areas or consumed.

Although the dominance of economic factors in the decison of rural people to migrate to urban areas has been established, the process and net effects of rural-urban migration are not adequately understood. Research directed toward a) measuring rural-urban income differentials, b) measuring capital transfers embodied in migration and the remittances of urban migrants to rural areas and c) determining the elasticity of migration with respect to the urban wage rates and unemployment rates would help in formulating

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[1/] See the recent paper by Edwards and Todaro [1972] for a plea to reconsider further investments in education beyond literacy in African countries.

policies for increasing rural employment and reducing urban unemployment. Finally migration research in Africa could benefit greatly by integration with micro-level research in rural areas since the decision to migrate is an investment with a complexity of opportunity costs including allocation of labor to current farm and nonfarm production or further investment in the stock of productive resources in rural areas.

6. AGGREGATE ANALYSIS OF RURAL EMPLOYMENT IN DEVELOPMENT

The foregoing discussion has focused on labor utilization in rural areas and its out-migration into urban areas. In this section we recognize the interaction between sectors at the aggregate level in the product and factor markets. We seek an understanding of the structural changes in the economy; that is, the changing role of each sector in output and employment as growth proceeds. This enables us to draw some tentative conclusions about the possible role of rural employment in the solution of employment problems in developing countries. We first discuss the general nature of structural changes in African economies and then review various theoretical models that attempt to analyze employment problems at the aggregate level.

(A) Population Growth, Structural Changes and Employment in Africa

Any discussion of the employment problem in Africa must be viewed in the light of the high population growth rate which is the basic determinant of the growth of labor supply. Table I shows that the population is expected to grow at a rate of about 2.7 percent for the remainder of this century. Even though Africa has one of the highest rates of urban population growth in the world, the rural population is expected to increase at two percent a year under current trends. These rates of growth are even more pronounced in Tropical Africa. For example, in Western Africa between 1960 and 1970

TABLE 1. Estimated and Projected Population Growth Rates in Africa, 1950 - 2000

Period	Rural	Urban	Total	Percentage Urban at Beginning of Period
1950 - 1960	1.5	4.7	2.1	13.6
1960 - 1970	1.8	5.1	2.4	18.5
1970 - 1980	2.1	4.5	2.7	23.2
1980 - 1990	1.8	4.4	2.6	27.8
1990 - 2000	1.9	4.3	2.7	33.3

Source: Adapted from Kocher [1972], page 21.

TABLE 2. Estimated Population Growth Rates in Various Regions of Africa, 1950 - 1970

Region	Period	Rural	Urban	Total	Percent Urban at Beginning of Period
Northern	1950 - 60	1.7	4.3	2.4	24.6
	1960 - 70	1.8	4.2	2.6	29.6
Western	1950 - 60	2.9	6.9	3.4	10.6
	1960 - 70	2.5	6.2	3.1	14.7
Eastern	1950 - 60	2.2	5.5	2.5	5.6
	1960 - 70	2.2	5.3	2.5	7.5
Middle & Southern	1950 - 60	1.3	7.7	1.8	6.4
	1960 - 70	1.5	4.9	2.0	11.6
South Africa	1950 - 60	1.5	3.9	2.5	39.1
	1960 - 70	1.2	3.5	2.3	44.9
Total	1950 - 60	1.5	4.7	2.1	13.6
	1960 - 70	1.8	5.1	2.4	18.5

Source: Kocher [1972], page 19.

the rural and urban population grew at 2.5 percent and 6.2 percent, respectively. But even at the end of this period Western Africa was less than 20 percent urbanized. (See Table 2.)

Only very incomplete evidence exists on the structural changes in Africa among the four sectors used in our framework of the analysis (i.e. large-scale urban, small-scale urban, small-scale rural and agriculture). Most national accounts use an industrial sector breakdown without providing a breakdown of nonagricultural sectors by large-scale and small-scale firms and rural and urban location. Consequently, most information exists on the changing contribution of agriculture relative to nonagriculture. The statistics show the expected decline in the share of the agricultural sector in both employment and income. However, the terms of trade effects between the two sectors are not well documented. In Nigeria, until recently the growth pattern indicated fairly stable terms of trade, but in other countries such as Zaire, Ghana, and Sierra Leone sharp rises in food prices have been averted by food imports. The most extensive analysis of terms of trade has been made by Young [1971] and Maimbo and Fry [1971] in Zambia. Both studies show a strong movement of the terms of trade against agriculture.

The increases in nonagricultural employment and income are unevenly distributed between the large-scale nonagricultural sector and the rural and urban small-scale sectors. For most African countries there are good statistics on employment in the large-scale urban sectors which show a remarkably slow growth of employment of generally less than 2 percent [Frank 1971]. Thus, most of the increase in nonagricultural employment has been in the small-scale sector particularly in urban areas. In Nigeria with about 40 percent of the urban labor force in the large-scale

sector, a 1.5 percent increase in the employment in this sector compared to a six percent increase in the urban labor force annually, implies a 9 percent increase in those either unemployed or employed in the urban small-scale sector. Except in the unlikely event that there was an extremely high growth rate in the output of this sector, these results would suggest that the urban small-scale sector has a considerable pool of underemployed labor (Kilby [1969]).

The evidence from most African countries would suggest an unbalanced growth in income and employment with the large-scale sectors having a high rate of growth of output but a low rate of growth of employment relative to the small-scale sectors. The factors contributing to this process have been discussed by Eicher, et. al. [1970], Frank [1971], and Todaro [1971]. Basically there are various factor price distortions that favor substitution of capital for labor in the large-scale sector. These include fiscal policies, monetary policies and foreign exchange policies. High wage policies in particular may have adverse effects in urban areas through increased labor supply and decreased demand.[1/]

(B) Models of Employment and Development

The aggregate growth models of the Harrod-Domar type which are generally used in the planning process focus on growth of output through capital accumulation and are not useful in analyzing sectoral patterns of employment and income distribution. The early dual economy models of the Fei-Ranis type did consider labor, but suffered from assumptions of surplus

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[1/] There is some evidence that firms have adopted capital intensive techniques in response to higher wages (Harris and Todaro [1969]). But because of a limited government budget, the most important effect is likely to be on government employment, which often constitutes up to half of total employment in the large-scale sector. (Frank [1971]).

labor and institutional wages in agriculture and limited interaction in the product and factor market. Recently, however several attempts have been made to modify the dual economy models to analyze the employment problem. These include, among others, the models of Harris and Todaro [1970] and Mellor and Lele [1971] and Oshima [1971].

The Harris and Todaro [1970] two sector model arose out of the authors' attempts to analyze the urban unemployment problem in Kenya. Using the Todaro model of rural-urban migration in a comparative static framework they analyze the implications of various policies on urban unemployment. Rural-urban interactions in the labor market are explicitly modeled as well as a rudimentary product market. The assumptions about wage rate determination are particularly interesting. They assume an institutionally determined wage rate in urban areas and a wage determined by labor supply and demand in rural areas. This is a direct reversal of the assumptions of the Fei-Ranis model. Using these assumptions, Harris and Todaro demonstrate that increases in urban employment are not likely to reduce urban unemployment because of the nature of migration from rural areas. A logical implication then is that employment must be created in rural areas through rural development to reduce urban unemployment. But Byerlee [1971] shows that within the closed economy model of Harris and Todaro, an increase in agricultural output is likely to increase migration (and urban unemployment) since the agricultural terms of trade fall while the wage rate in urban areas is fixed. This demonstrates the dangers of using a closed economy assumption.

The Mellor-Lele [1970] model of development focuses specifically on the effect of an increase in agricultural output through technological change on income and employment in the nonagricultural sector. In

particular, by including landlord and laborer classes in the agricultural sector they analyze the effect of changing factor shares resulting from technological change in agriculture and nonagricultural employment through both the labor and product markets. For example, an increase in agricultural output resulting from technological change increases nonagricultural employment because of lower food prices and hence urban wages. However, because of a significant labor bias in technological change this effect is dampened because the relatively high income elasticity of demand for food of agricultural laborers tends to increase food prices.[1/] The Mellor-Lele model however, must be modified for use in African countries because of the landlord-tenant system assumed in agriculture and the assumption of a competitive urban labor market, and a wage rate in agriculture equal to the average productivity.

Finally, Oshima [1970] proposes an interesting departure from the conventional two sector model to include three sectors a) capital intensive nonagriculture, b) labor intensive nonagriculture and c) labor intensive agriculture. With an equitable income distribution and an agricultural strategy which emphasizes increases in productivity of small farmers, income and employment are generated by the interaction of the two labor intensive sectors with the capital intensive sector somewhat peripheral in the early stages of development. Thus the Oshima model shifts the emphasis in development strategy from growth in the capital intensive sector through high savings and investment to the labor intensive

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[1/] This result ignores the backward and forward linkages of agriculture. Kilby and Johnston [1971], note that a labor intensive strategy of agricultural development which emphasizes limited small-scale mechanization has the greatest effect on employment and growth since these machines are produced in the rural and urban small-scale sectors under labor intensive techniques. Alternatively, tractors are produced in the large-scale sector or imported. These important interactions in the product market as a result of technological change in agriculture are not considered by the Lele-Mellor model.

sectors where increasing effective demand and fuller employment of labor are the main instruments of growth.

Oshima's model is significant in that it focuses on the structure of demand as an important determinant of growth and employment. In particular, a more equitable income distribution is likely to increase the demand for labor intensive domestically produced goods and hence increase employment. Land and Soligo [1971] in a more formal analysis of this relationship arrive at similar conclusions to Oshima, and also indicate that there is no necessary conflict between growth and employment even if high income groups do save more.[1/]

These models all attempt to analyze the behavior of employment at the aggregate level through the interactions of sectors in the product and factor market. However, because of the complexity of such interactions, each model is only able to focus on a few key interactions between two sectors. Reynolds [1969] in recognizing this problem suggests that any departure from a two sector model to include additional sectors and sectoral interactions would mean forgoing analytical solution techniques. He proposes numerical simulation as an alternative but recognizes that this would require greatly improved empirical information from a number of countries in order to conduct realistic experiments on the economic system.

Byerlee [1971] has developed a macro-economic simulation model of Nigeria, consisting of three sectors, large-scale nonagriculture, small-scale nonagriculture and agriculture, to analyze the aggregate impact of

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[1/] Kocher [1972] presents evidence that income distribution may not only effect labor demand but also labor supply. He shows that countries with a relatively equitable income distribution generally have a lower birth rate than countries at a comparable stage of development but with a more inequitable income distribution.

various agricultural strategies on income, employment and migration. The model demonstrates that although policies to promote food production shifted the terms of trade against agriculture, this did not result in a significant increase in urban employment largely because of an institutionally fixed urban wage. In fact, because income was redistributed from rural to urban areas rural-urban migration and hence, urban unemployment were further increased. However, policies to increase agricultural exports did increase nonagricultural employment opportunities in both the small-scale and large-scale sectors because of increased demand for nonagricultural products and increased foreign exchange availability. Although much theoretical and empirical work needs to be done to refine such a model, the analysis does demonstrate the merits of a dynamic model of the many interactions between sectors of the economy in analyzing employment at the macro-level.

(C) Implications for Improved Theory

Most development models consider only a few key interactions between sectors of the economy. Development of more complete models of structural changes in the economy as they affect employment will require a more adequate understanding of sectoral interactions in the product and factor markets. At the early stages of development the exchange of consumption goods between sectors is of prime importance in the product markets. However, as development proceeds exchanges of investment goods and production inputs becomes more important. In the factor markets we have already discussed rural-urban migration as a key interaction in the labor market. There are also important intersectoral capital transfers. Lee's [1971] study in Taiwan has documented the considerable agricultural-nonagricultural interactions in the capital market, in particular the transfer of agricultural savings

for industrial development. In addition to these interactions there is the possibility of substitution of production between the various sectors. Thus, consumer goods may be produced in the large-scale sector or the small-scale sectors and in the latter case in rural or urban areas.[1/]

Not only are present models for exploring the implications of these interactions for employment inadequate, but many assumptions are of questionable relevance in the African situation. Some of these assumptions and their implications for aggregate analysis of the employment question are summarized below:

(i) The assumption of an institutionally determined wage rate in the modern sector and a competitively determined wage rate in rural and urban small-scale sectors and agriculture would seem to better conform to the African situation than the usual assumption of an institutional rural wage and a competitive urban wage. In particular, there seems little evidence that the wage rate in the large-scale sector has responded to changing terms of trade in the last decade.[2/] There are several implications of such an assumption for development strategy. There will be no "invisible" transfer of resources from agriculture to the large-scale sector when the terms of trade move against agriculture--as would happen under a strategy of rapid food expansion, for example. Thus, a change in the terms of trade against agriculture would only reinforce the existing disparities in income between agriculture and the modern sector and further aggrevate rural-urban migration and urban unemployment. However, this

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[1/] This is a somewhat different situation from the traditional two sector model where food and nonfood goods are not substitutes.

[2/] Maimbo and Fry [1971] in particular, in Zambia note the strong upward movement of real wages despite a decline in agriculture's terms of trade.

analysis ignores the considerable importance of the rural and urban small-scale industries. Rapid expansion of food production and lower food prices will reduce the competitively determined wage rate in the small-scale nonagricultural sectors, enhancing their ability to compete with the large-scale sectors and providing the savings for further growth in these sectors. The lower food prices as a result of technological change could also provide increased effective demand for the output of small-scale sectors as a result of expanded purchasing power of low income consumers. These interactions are particularly important since growth in the small-scale sectors which use labor intensive techniques will greatly expand employment.

(ii) One of the most important transfers of resources from agriculture in Africa is through rural-urban migration of educated persons. That is a large part of the savings in agriculture are expended on educating children who eventually migrate to urban areas. This may be regarded as another "invisible" transfer of resources from agriculture. Furthermore, a high urban wage rate may have encouraged an over investment in education in order to secure urban jobs at the expense of further investment in agriculture. But the net transfer of resources depends on remittances of educated persons to their home areas. In any event, the transfer of resources associated with migration underlines the need to broaden the definition of the capital market to include human as well as physical capital in models of development.

(iii) The structure of demand particularly as it is affected by income distribution must be considered in analysis of the employment problem. Most models focus explicitly on the supply side of growth. Thus the effect of factor price distortions on capital-labor ratios has received particular

attention in analysis of employment problems. But if higher income groups have a higher income elasticity for output of the capital intensive sector and imports, employment will be increased by policies that increase the income of lower income groups. Thus in many African countries the modern sector has been the fastest growing sector, but because of the relatively low income elasticity for food of the wage and salary earners of this sector, rural incomes and employment have increased much more slowly. A theory of development which focuses on both growth and employment will need to explicitly consider both the demand and supply sides of product and factor markets.

8. SUMMARY AND IMPLICATIONS

1. We have proposed a framework for the analysis of rural employment in economic development. This consists of a) micro-economic analysis of the rural labor market and in particular labor utilization and productivity in farm and nonfarm activities in rural areas, b) analysis of rural-urban migration as the major linkage of the rural and urban labor markets and c) aggregate analysis of rural employment as it is influenced by interaction in the product and factor markets between four sectors: i) urban large-scale, ii) urban small-scale, iii) rural nonfarm and iv) agriculture.

2. The micro-level analysis of rural labor markets has dispelled earlier notions of high leisure preference of African workers and the rigidities of the land tenure system as it affects labor allocation. African rural labor markets show substantial mobility of labor between farm and nonfarm jobs, between farms and between regions. Likewise, the labor market has adjusted over time with the introduction of cash crops through

a) use of seasonal slacks in labor demand, b) reduction in nonfarm activities and c) use of leisure time. Nonetheless, there exists a considerable lack of underemployed labor in rural areas, particularly at certain seasons of the year, which could be utilized in increasing output and employment in rural areas.

In formulating policies for rural employment and rural development in Africa, we lack micro-level information in two important areas. First, the role of the nonfarm sector in rural development has been virtually ignored, even though nonfarm employment is important in rural areas and its importance is likely to increase as rural development proceeds. Second, most research on farm mechanization has been deficient because of lack of suitable micro-level data and over-emphasis on only one option such as tractor hire schemes. Research on mechanization should be pursued as an integral part of production economics studies to determine capital-labor substitutability in particular crops and farm systems.

3. Rural-urban migration is proceeding at a rapid rate apparently in response to the rural-urban income differential. However, the process and net effects of rural-urban migration are not adequately understood. Research is needed on a) measuring rural-urban income differentials, b) measuring capital transfers embodied in migration and the remittances of urban migrants to rural areas, and c) determining the elasticity of migration with respect to the urban wage rate and urban unemployment.

4. Present macro-models of economic development are deficient for analysis of rural employment in developing countries because a) they give inadequate attention to employment, b) they are partial equilibrium analyses of a more complex problem or c) the institutional assumptions of the models are not widely applicable, particularly in the African context.

We have proposed several elements needed for a more comprehensive analysis of rural employment.

5. The foregoing discussion reveals that very little research has been done on several important topics on rural employment, off-farm rural employment and migration in Africa. Until better theory can be developed and more solid micro-level data collected, economists are limited in advising policy makers on problems of employment in rural areas.

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